It is particularly noteworthy that, even after initial fracture, composites of the present invention retain a substantial fraction of their original untested strength. This resistance to fracture, even in the presence of initiated damage, is distinctly different from the brittle nature of conventional ceramic articles.

The reinforced ceramics of the present invention have particular utility in environments where oxidation resistance, high strength, and toughness are required, and, because those properties are retained in a high temperature environment (e.g., in excess of 1000° C. and even in excess of 1200° C.), the inventive composites are eminently suitable for use in such applications as a gas turbine engine or internal combustion engine environment, and in high temperature structural ceramic components.

Although this invention has been shown and described with respect to detailed embodiments thereof, it will be understood by those skilled in the art that various changes in form and detail thereof may be made without departing from the spirit and scope of the claimed invention.

We claim:

1. A method of forming silicon carbide fiber reinforced glass-ceramic matrix composites comprising hot pressing a mixture of about 15% to about 70% by volume of silicon carbide fibers in a glass powder matrix consisting essentially of:

MgO	5–15%	As_2O_3	0.5–3%
Al_2O_3	20–40%	Nb_2O_5	0–10%
SiO_2	40–60%	Ta_2O_5	0–10%
BaO	5–15%		

at about 1200° C. to about 1500° C., followed by heating the hot pressed composite at about 1100° C. to about 1200° C. for about 24 hours to about 60 hours resulting in a composite with high strength and thermal stability at temperatures in excess of 1200° C.

2. The method of claim 1 wherein the glass powder matrix consists essentially of about 7.4% MgO, about 28.1% Al_2O_3, about 49.7% SiO_2, about 14.1% BaO, and about 0.7% As_2O_3.

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